Universität Basel

Research Project

An ion-atom hybrid trap on a chip; synthesis and control of nanosystems on the single-molecule level

Third-party funded project

Project title An ion-atom hybrid trap on a chip; synthesis and control of nanosystems on the single-molecule level
Principal Investigator(s) Willitsch, Stefan ;
Co-Investigator(s) Treutlein, Philipp ;
Organisation / Research unit
Departement Chemie / Chemische Physik (Willitsch)
Department
Project start 01.07.2013
Probable end 30.06.2017
Status Completed

We propose to develop a hybrid trap on a semiconductor chip for the simultaneous trapping of single atomic and molecular ions with ultracold atoms. The project will advance current trapping technology to enable for the first time a complete quantum manipulation of a combined ion-atom system paving the way for the engineering of new nanoscopic quantum systems and the full quantum control of chemical reactions on the single-molecule level. The project is highly interdisciplinary, combining the nanosciences, chemistry and quantum optics, and is laid out as a collaboration between the Willitsch (Dept. of Chemistry) and the Treutlein (Dept. of Physics) groups, involving the shared supervision of a PhD student, joint workshops and the transfer of knowledge between the groups.

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